Beringian Research Notes

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Figure 1. Restoration of the gigantic camel Titanotylopus. Illustration by Andrew Robinson from *Macmillan Illustrated Encyclopedia of Dinosaurs and Prehistoric Animals*.

Ice Age Yukon and Alaskan Camels

It is a poorly known fact that camels (Family Camelidae) originated and underwent most of their evolution in North America. The earliest known Late Eocene (about 40 million years ago) camelids like *Protylopus* were rabbit-sized with four-toed feet and low-crowned teeth. The sheep-sized *Poebrotherium* of Oligocene time (37 to 24 million years ago) was common in open woodlands of what is now South Dakota, and had already "lost" the lateral toes. During the Miocene (24 to 5 million years ago), camels increased in size with lengthening necks and limbs, also developing an efficient pacing gait for traversing the expanding steppe and grassland habitat of the time. In the Early Pliocene some 5 million years ago, camels spread, eventually reaching South America and the Old World (via a Bering Isthmus). Some of these camels were gigantic, like *Titanotylopus* from Nebraska. The South American lineage gave rise to such species as llamas and their relatives all adapted to grazing on high-altitude steppes.

Ironically, camels became extinct in their place of origin toward the close of the last glaciation. Although we know a good deal about camels and their origins, few people realize that they once lived in Yukon and Alaska.

Camelid bones recovered in the Old Crow River Basin in northern Yukon are chiefly from large camels much larger than either the modern twin-humped camel (*Camelus bactrianus*, which occurs naturally in small numbers in the Gobi Desert of central Asia) or the single-humped dromedary (*Camelus dromedarius*, used domestically from North Africa to India and now running wild in the Australian outback after introduction there). The fossils are closest in shape and size to a *very* large member of the true camel group (Camelini) like *Titanotylopus* mentioned earlier (Figure 1). That camel had long, massive limbs, a relatively small braincase, a convex region between the eye sockets and well-developed third premolar teeth in both jaws. It was about 3.5 m tall, with long spines on the thoracic vertebrae indicating a large hump. Its snout was shorter than that of *Camelops*, the other smaller camel reported from Yukon and Alaskan Ice Age deposits. Evidently males were larger and had more robust skulls and canine teeth than females. *Titanotylopus* occupied western North America from about 5 to 1 million years ago. Could these Yukon *Titanotylopus*-like camels be relics of an earlier migration to Eurasia, having given rise to *Gigantocamelus* (considered by some experts as identical to *Titanotylopus*) of the southern Ukraine (Odessa and Cherkassy) about 5 million years ago?

A number of bones of another smaller camel (*Camelops hesternus*, the western camel, distantly related to the modern llamas of South America) have been recovered on the banks of the Sixtymile River near the Yukon-Alaska border. Oddly, all *Camelops* bones are from the same locality, a placer-mining site of Chuck and Lynn McDougall. In the process of washing away masses of frozen silt ("muck") covering the gold-bearing gravels, the miners sometimes encounter bones of Ice Age animals. This particular site has produced hundreds of fossils belonging to woolly mammoth, steppe bison, large and small horses, American mastodon, caribou, mountain sheep, helmeted and tundra muskoxen, caribou, moose, wapiti, wolf, wolverine, scimitar cat, American lion, ground squirrel (with ancient nests and droppings), bird, and a virtually perfect carcass of a black-footed ferret, fur and all! One of the *Camelops* bones from Sixtymile was radiocarbon dated to about 23,000 years ago, near the cold peak of the last glaciation. Climate was drier then, and cool steppe-like conditions with broad grassy tracts prevailed compared to the spruce forest that covers the area now, with tundra on the uplands.

Thirty-six western camel remains have been reported from mining sites near Fairbanks, Alaska (about two-thirds are from Cripple Creek and Gold Hill; others are from Engineer, Fairbanks and Ester creeks). Dates on a number of the bones range between 40,000 and 25,000 years when climate began cooling toward the peak of the last glaciation. So, perhaps western camels did not enter Yukon and Alaska from the south until the relatively warm mid-Wisconsinan interstadial (about 50,000 to 25,000 years ago), dying out there toward the peak of the last glaciation.

Figure 2: Restoration of *Camelops hesternus*. Illustration from *Rancho La Brea: Treasures of the Tar Pits*. Natural History Museum of Los Angeles County, Science Series 31, 1985.

Western camels were confined to North America, having been most abundant in the western United States, southwestern Canada (Alberta and Saskatchewan) and central Mexico during the last part of the Ice Age (about 600,000 to 10,000 years ago). They probably reached unglaciated Yukon and Alaska by migrating northward via dry terrain on the eastern flanks of the Rocky Mountains during a relatively warm period (see above). How did they survive the northern winters? Modern camels are able to grow thick pelts under cold conditions. I have seen Bactrian camels at ease, wandering over snow-covered land in mid-winter at a game farm in Alberta, and travellers have encountered them "plodding stolidly through north-Asiatic blizzards".

In life, the western camel probably looked like a large dromedary, however its limbs were about a fifth longer, its head was longer and narrower and the face was flexed downward to a greater extent (Figure 2). The shape of the snout (premaxilla) indicates that *Camelops* probably ate as much leaves, forbs (herbs other than grass) and fruits, as grass. The long neck and limbs allow it to reach high browse as well. *Camelops* seems to have been adapted to arid scrublands and grasslands, and Yukon and Alaskan finds suggest that it could tolerate cool, at times snow-covered steppe-like grasslands.

Western camel remains have been reported from at least 18 Paleo-Indian sites dating between about 12,600 and 10,000 years ago (when the species seems to have become extinct). A camel bone chopping tool was found at the Colby site, and there is evidence of butchering at the Casper and Carter/Kerr-McGee sites, also in Wyoming.

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